

Green 2 Troops – Model Car Design Challenge Badge

Goal: Build a working model car using your imagination and reused materials—*no trash allowed!*

Girl Scout Mission Connection: Engineers build things to solve problems and make life better. Girl Scout engineers do that *while protecting the planet!* This badge shows you how to reuse, repurpose, and reimagine everyday stuff into something that *moves!*

What You'll Need (Waste-Free Only)

1. Cardboard scraps (cereal boxes, snack boxes)
 2. Plastic lids, large buttons, or bottle caps (4 = wheels)
 3. Straws or paper tubes (for axles)
 4. Bamboo skewers, pencils, or sticks (cut to axle size)
 5. Paper clips or rubber bands (for steering or attachments)
 6. Reused tape or glue (use only what you already have)
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Step 1: See What Rolls

Badge Step: *Learn how things move*

Test how different objects roll—buttons, bottle caps, lids, marbles. Which ones go straight? Which wobble?

Girl-Led Prompt:

What makes something roll smoothly? How could you turn that into a car?

Step 2: Sketch and Plan

Badge Step: *Plan your model car*

Look through your recycled materials and sketch a simple car. Where will the wheels go? How will it roll?

Green Tip: Use old envelopes or packaging for your sketch paper—no fresh sheets needed!

Step 3: Build It!

Badge Step: *Build your car*

Use your supplies to create a frame from cardboard. Attach axles using straws or tubes and slide bottle caps or lids onto the ends. Spin those wheels!

Girl-Led Challenge:

Try to build your car without asking for help. You've got this, engineer!

Step 4: Test and Improve

Badge Step: *Test your design*

Try rolling your car on a smooth surface. If it turns or stops too soon, fix your wheel alignment or try a new “road.” No new materials—just rethink and reuse.

Step 5: Share It!

Badge Step: *Share what you built*

Show your car to a friend or family member. Talk about how you made it with *no waste!* Can they guess what you reused?

Optional Bonus Challenge:

Create a racetrack out of **scrap paper**, couch cushions, or books and race your car. Try adding a ramp (like in the Rollercoaster challenge)!

Badge Complete When:

- You built a car using only reused items

- You tested and improved it

- You shared it with someone and told them about waste-free building

- You didn't throw anything away—brilliant!
